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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/739,903

12/20/2000

Sang-Soo Lee

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4948

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05/03/2005

JACOBSON, PRICE, HOLMAN & STERN  
PROFESSIONAL LIMITED LIABILITY COMPANY  
400 Seventh Street, N.W.  
Washington, DC 20004

EXAMINER

LI, SHI K

ART UNIT

PAPER NUMBER

2633

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/739,903

Applicant(s)

LEE ET AL.

Examiner

Shi K. Li

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki (U.S. Patent 6,414,772 B2) in view of Kinoshita (U.S. Patent 6,023,366), Nelson et al. (L. Nelson et al., "Resonances in Cross-Phase Modulation Impairment in Wavelength-Division-multiplexed Lightwave Transmission, IEEE Photonics Technology Letters, Vol. 11, No. 7, July 1999) and Jopson (U.S. Patent 5,386,314).

Regarding claims 1 and 5, Miyazaki discloses in FIG. 13 and col. 8, line 58 an optical transmission system for suppressing SBS using cross-phase modulation (XPM). FIG. 13 comprises a plurality of transmitters, each having a wavelength separation. The difference between Miyazaki and the claimed invention is that Miyazaki does not teach to use one of the channels as supervisory channel. Kinoshita teaches in FIG. 1 to designate a wavelength channel for supervisory purpose. One of ordinary skill in the art would have been motivated to combine the teaching of Kinoshita with the optical transmission system of Miyazaki because a supervisory channel can carry supervisory information for network management. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to designate a wavelength channel as supervisory channel, as taught by Kinoshita, in the optical

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transmission system of Miyazaki because a supervisory channel can carry supervisory information for network management.

The modified optical transmission system of Miyazaki and Kinoshita still failed to teach a modulation frequency in the range of approximately 150 MHz to approximately 250 MHz. Nelson et al. discusses cross-phase modulation and teaches in p. 908, left col., second paragraph to use 50 and 150 MHz phase modulation for SBS suppression. Jopson teaches in col. 9, lines 13-17 to increase linewidth to about 200 to 300 MHz for raising the SBS threshold. One of ordinary skill in the art would have been motivated to combine the teaching of Nelson et al. and Jopson to use a modulation frequency within the range of 150~250 MHz because linewidth should be greater than 20 MHz (see col. 9, lines 8-9 of Jopson) but not too much to cause system degradation (see col. 9 lines 34-36 of Jopson). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use modulation frequency in the range of 150~250 MHz, as taught by Nelson et al. and Jopson, in the modified optical transmission system of Miyazaki and Kinoshita.

Regarding claims 2 and 6, Miyazaki includes in FIG. 13 optical coupler 2 for multiplexing output signals of the transmitters, a first optical amplifier 5-1 for amplifying the multiplexed signal. Miyazaki further teaches in FIG. 14 a receiver for the transmission system of FIG. 13. FIG. 14 includes a second optical amplifier 22, a demultiplexer 26 and receivers 28-1 to 28-8 for the wavelength channels. The receiver corresponding to the wavelength designated for supervisory receivers the supervisory signal.

Regarding claims 3-4 and 7-8, Nelson et al. teaches to use a high power pump channel for generating phase modulation by cross phase modulation effect.

***Response to Arguments***

3. Applicant's arguments filed 13 January 2005 have been fully considered but they are not persuasive.

The Applicant argues that Kinoshita is silent regarding cross-phase modulation and therefore is also silent regarding using the supervisory signal for cross-phase modulation. The Applicant concludes that the combination of Miyazaki and Kinoshita fails to teach or suggest that the cross phase modulation effect is based on the supervisory channel. The Examiner disagrees. The Applicant admits that Miyazaki teaches a WDM transmission system using cross-phase modulation for suppressing SBS and attacks Kinoshita individually for not teaching cross phase modulation. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Cross-phase modulation is a physical phenomenon that occurs regardless of the information content of the WDM channels. In the modified optical transmission system of Miyazaki, Kinoshita, Nelson et al. and Jopson, one (or more) wavelength channel is used for carrying supervisory signal, as taught by Kinoshita. Nelson et al. explains in page 907, left col., last paragraph that XPM arises in an amplitude-shift keyed WDM system when signals induce phase distortion on co-propagating channels and group-velocity dispersion converts this phase distortion into amplitude distortion. That is, XPM is due to co-propagating of channels of difference frequencies. Therefore, XPM occurs in the modified optical transmission system of Miyazaki, Kinoshita, Nelson et al. and Jopson.

***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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29 April 2005



**JASON CHAN**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2600**